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EXAMINER	
LEE, GILBERT Y	

ART UNIT	PAPER NUMBER
3676	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/801,095	MELLER ET AL.	
	Examiner	Art Unit	
	GILBERT Y. LEE	3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-7,9-11,14-23 and 25-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-7,9-11,14-23 and 25-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/24/09 has been entered.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claim 7 is objected to because of the following informalities: in line 2 "said the" should be changed to "said". Appropriate correction is required.

4. Claim 26 is objected to because of the following informalities: paragraph 2, line 2 "sealingsurface" should be changed to "sealing surface". Appropriate correction is required.

5. Claim 27 is objected to because of the following informalities: paragraph 3 starting with "wherein the second gap" should be placed after paragraph 6 of claim 27. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 4-7, 9-11, 14-23, and 25-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 25, 26, 27, and 28 recite "minus the area of said supporting flank of said second gap width". It is unclear as to what is being claimed since the second gap width is on the side of the groove that is opposite the supporting flank.

Claims 4-7, 9-11, and 14-23 are rejected for depending on a rejected claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 4-7, 9, 11, 14-20, 22, 23, and 25-28, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Abiko (WIPO Pub. No. WO 01/84024 A1) in view of Reiners (US Patent No. 3,104,594).

Regarding claim 1, the Abiko reference discloses a sealing arrangement (Fig. 9) consisting essentially of a sealing ring (110) having a generally triangular or trapezoidal cross-section (Fig. 9) including a radially internal or external sealing surface (e.g. surface of 110 in contact with 200), where, to one side of the sealing surface, the sealing ring displays a pressurizing surface (e.g. right surface of 110) and, on the opposite side, a supporting surface (e.g. left surface of 110),

wherein the supporting surface is completely designed as a lateral surface of a truncated cone (Fig. 9),

wherein the sealing ring is divided almost completely or throughout in the radial direction at one point on its circumference (e.g. at T), forming a weaker area,

wherein the entire sealing surface is in sealing contact (Fig. 9) to form a seal when the sealing ring is pressurized.

However, the Abiko reference fails to explicitly disclose the two components and that the areas of the lateral surface of a truncated cone of the pressurizing surface or the supporting surface, or of the pressurizing surface and the supporting surface, each enclose an angle of 30° to 60° with the sealing surface towards said sealing surface.

The Reiners reference, a sealing system for a truncated cone seal, discloses two components (33 and 13 including 22) moving relatively to each other, said components having a first gap width (gap width between 13 and 33) therebetween, including a fluid

medium (Col. 3, Lines 38-41) and, on the opposite side, a supporting flank (26) of the component accommodating the sealing ring (Fig. 3),

wherein one of the two components displays a groove (17) without an undercut to receive the sealing ring, where the groove displays a supporting flank (26) opposite the supporting surface of the sealing ring (Fig. 3), and a pressure-side flank (24) opposite the pressurizing surface of the sealing ring (Fig. 3), where the sealing surface of the sealing ring projects from the groove in the radial direction (Fig. 3), and wherein said sealing ring has a central longitudinal axis (e.g. axis shown in Fig. 1);

wherein a second gap width (e.g. gap width between 27 and 24) is provided, at least between the pressurizing surface of the sealing ring and the pressure-side flank (Fig. 3), into which the fluid medium to be provided on the pressure side of the sealing ring can flow, pressing the sealing ring in sealing fashion against the supporting flank of the groove and against one of said two components (Fig. 3), and, by application of pressure by the fluid medium, the supporting surface of the sealing ring, minus the area of the supporting surface corresponding to the first gap width, can be brought into flat area contact with the supporting flank of the groove (Fig. 3), minus the area of the supporting flank corresponding to the second gap width (Fig. 3),

wherein the supporting surface results in flat contact with the supporting flank of the groove (Fig. 3),

wherein the second gap extends over the entire lateral extension of the sealing ring (Fig. 3),

wherein the sealing arrangement is characterized in that the pressurizing surface or the supporting surface, or the pressurizing surface and the supporting surface, each form a lateral surface and the lateral surfaces each extend at least up to the area of the sealing ring projecting from the groove and into said first gap between said components (Fig. 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the two components to the Abiko reference in view of the teachings of the Reiners reference in order to provide a more efficient seal and since providing the two components would provide predictable results.

Discovering an optimum range of a result effective variable involves only routine skill in the art. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the areas of the lateral surface of a truncated cone of the pressurizing surface or the supporting surface, or of the pressurizing surface and the supporting surface, each enclose an angle of 30° to 60° with the sealing surface towards said sealing surface as a matter of mechanical expedience. Note that the modified Abiko reference discloses the structural limitations of claim 1 and is therefore **capable of** radial compression towards the radially internal sealing surface, or of expansion towards the radially external sealing surface.

Regarding claim 4, the Abiko reference, as modified in claim 1, discloses that the area of the pressurizing surface and the supporting surface, with the form of a truncated

cone follows on laterally, at least almost directly, from the sealing surface (Abiko, Fig. 9).

Regarding claim 5, the Abiko reference, as modified in claim 1, discloses a surface (Abiko, e.g. bottom surface of seal) being located between the pressurizing surface and the supporting surface, opposite to the sealing surface, which is a lateral surface of a truncated cone (Abiko, Fig. 9).

Regarding claim 6, the Abiko reference, as modified in claim 1, discloses the radial thickness (Abiko, e.g. thickness taken between bottom surface of the seal in Fig. 9a and the bottom dotted line) of the sealing ring being less than/equal to the extension of the sealing surface in the axial direction of the sealing ring (Abiko, Fig. 9a).

Regarding claim 7, the Abiko reference, as modified in claim 1, discloses the pressurizing surface and the supporting surface being profiled (Abiko, Fig. 9).

Regarding claim 9, the Abiko reference, as modified in claim 1, discloses the weaker area being designed as a complete division of the sealing ring (Abiko, Fig. 9b), formed two opposite sealing ring ends, in that at least one, integrally molded area extending in the circumferential direction of the sealing ring being provided on each of the sealing ring ends, and in that the areas associated with different sealing ring ends being located one behind the other in the axial direction of the sealing ring, forming a labyrinth seal (Abiko, Fig. 9b). Note that the ends of the sealing ring of the Abiko reference are **capable of** being in contact with each other in operating condition.

Regarding claim 11, the Abiko reference, as modified in claim 1, discloses the sealing surface being partly or entirely arranged concentrically to the central longitudinal

axis of the sealing ring (Reiners, Fig. 1), and being designed as the surface of a cylinder that can be a radially external or internal boundary surface of the ring (Reiners, Fig. 1).

Regarding claim 14, the Abiko reference, as modified in claim 1, discloses the second gap extending at least partially over the side of the sealing ring opposite the sealing surface of the sealing ring (Reiners, Fig. 3), which forms a transitional area (Reiners, e.g. 29) between the supporting surface and the pressurizing surface (Reiners, Fig. 3).

Regarding claim 15, the Abiko reference, as modified in claim 1, discloses the sealing ring projecting from the groove in the component in the radial direction by less than one-third of its radial thickness (Reiners, Fig. 3).

Regarding claim 16, the Abiko reference, as modified in claim 1, discloses the supporting flank of the groove being brought into full contact with the supporting surface of the sealing ring by pressurizing fluid medium (Reiners, Fig. 3).

Regarding claim 17, the Abiko reference, as modified in claim 1, discloses the second gap displaying an essentially constant gap width over its radial extension (Reiners, Fig. 3).

Regarding claim 18, the Abiko reference, as modified in claim 1, discloses the groove being of rounded design in the area of the groove base, or in at least one transitional area to an adjacent groove flank (Reiners, Figs. 2-5).

Regarding claim 19, the Abiko reference, as modified in claim 1, discloses a first of said two components (Reiners, 13 and 22) being provided, which displays the sealing ring accommodated in a circumferential groove, and in that a second of said two

components (Reiners, 33) being provided, which is capable of motion relative to the first of said two components and with which the sealing surface of the sealing ring can be brought into contact in sealing fashion during motion of the components relative to each other (Reiners, Fig. 3), and in that the sealing ring is located in the groove without pretension in relation to the component to be sealed (Reiners, Fig. 2).

Regarding claim 20, the Abiko reference, as modified in claim 1, discloses the component accommodating the sealing ring in the groove being a shaft (Reiners, Col. 2, Lines 34-37), and in that a shaft guide (Reiners, 33)is provided, with which the sealing surface of the sealing ring can be brought into contact in sealing fashion by application of the pressure of the fluid medium during rotary motion of the shaft and the shaft guide relative to each other (Reiners, Fig. 3), in that the shaft guide is made of a light metal, and in that the supporting surface of the sealing ring is inclined to the longitudinal axis of the sealing ring such that, owing to the pressure force of the fluid medium on the sealing ring, the sealing ring is located in non-rotating fashion relative to the shaft guide (Reiners, Fig. 3).

Regarding claim 22, the Abiko reference, as modified in claim 1, discloses the two components comprising a shaft (Reiners, 13 and 22) and a shaft guide (Reiners, 33).

Regarding claim 23, the Abiko reference, as modified in claim 1, discloses the two components comprising a cylinder (Reiners, 33) and a piston (Reiners, 13 and 22).

Regarding claim 25, the Abiko reference discloses a sealing arrangement (Fig. 9) comprising a sealing ring (110) having a generally triangular or trapezoidal cross-

section (Fig. 9), including a radially external sealing surface (e.g. surface of 110 in contact with 200), where, to one side of the sealing surface, the sealing ring displays a pressurizing surface (e.g. right surface of 110) to be pressurized and, on the opposite side, and a supporting surface (e.g. left surface of 110),

wherein the supporting surface is completely designed as a lateral surface of a truncated cone (Fig. 9),

wherein the sealing ring is divided almost completely or throughout in the radial direction at one point on its circumference (e.g. at T), forming a weaker area.

However, the Abiko reference fails to explicitly disclose the two components and that the areas of the lateral surface of a truncated cone of the pressurizing surface or the supporting surface, or of the pressurizing surface and the supporting surface, each enclose an angle of 30° to 60° with the sealing surface towards said sealing surface.

The Reiners reference, a sealing system for a truncated cone seal, discloses two components (33 and 13 including 22) moving relatively to each other, said components having a first gap width (gap width between 13 and 33) therebetween, including a fluid medium (Col. 3, Lines 38-41) and, on the opposite side, a supporting flank (26) of the component accommodating the sealing ring (Fig. 3),

wherein one of the two components displays a groove (17) without an undercut to receive the sealing ring, where the groove displays a supporting flank (26) opposite the supporting surface of the sealing ring (Fig. 3), and a pressure-side flank (24) opposite the pressurizing surface of the sealing ring (Fig. 3), where the sealing surface

of the sealing ring projects from the groove in the radial direction (Fig. 3), and wherein said sealing ring has a central longitudinal axis (e.g. axis shown in Fig. 1);

wherein a second gap width (e.g. gap width between 27 and 24) is provided, at least between the pressurizing surface of the sealing ring and the pressure-side flank (Fig. 3), into which the fluid medium to be provided on the pressure side of the sealing ring can flow, pressing the sealing ring in sealing fashion against the supporting flank of the groove and against one of said two components (Fig. 3), and, by application of pressure by the fluid medium, the supporting surface of the sealing ring, minus the area of the supporting surface corresponding to the first gap width, can be brought into flat area contact with the supporting flank of the groove (Fig. 3), minus the area of the supporting flank corresponding to the second gap width, at least on the side facing the sealing surface, and wherein the second gap width extends over the entire lateral extension of the sealing ring (Fig. 3),

wherein the second gap width extends over the entire lateral extension of the sealing ring (Fig. 3),

wherein the supporting surface results in flat contact with the supporting flank of the groove (Fig. 3),

wherein the second gap extends over the entire lateral extension of the sealing ring (Fig. 3),

wherein the sealing arrangement is characterized in that the pressurizing surface or the supporting surface, or the pressurizing surface and the supporting surface, each form a lateral surface and the lateral surfaces each extend at least up to the area of the

sealing ring projecting from the groove and into said first gap between said components (Fig. 3).

wherein the sealing surface being in sealing contact with one of the two components provides a sealing area (e.g. area of contact between 27 and 33 in Fig. 3) and wherein the sealing area is provided when the supporting surface of the sealing ring is in flat area contact with the supporting flank of the groove (Fig. 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the two components to the Abiko reference in view of the teachings of the Reiners reference in order to provide a more efficient seal and since providing the two components would provide predictable results.

Discovering an optimum range of a result effective variable involves only routine skill in the art. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the areas of the lateral surface of a truncated cone of the pressurizing surface or the supporting surface, or of the pressurizing surface and the supporting surface, each enclose an angle of 30° to 60° with the sealing surface towards said sealing surface as a matter of mechanical expedience.

Regarding claim 26, the Abiko reference discloses a sealing arrangement (Fig. 9) comprising a sealing ring (110) having a generally triangular or trapezoidal cross-section (Fig. 9), including a radially external sealing surface (e.g. surface of 110 in contact with 200), where, to one side of the sealing surface, the sealing ring displays a

pressurizing surface (e.g. right surface of 110) to be pressurized and, on the opposite side, and a supporting surface (e.g. left surface of 110),

wherein the pressurizing surface and the supporting surface are inclined relative to the sealing surface and enclose an angle of less than 90° towards the sealing surface (Fig. 9),

wherein the sealing ring is divided almost completely or throughout in the radial direction at one point on its circumference (e.g. at T), forming a weaker area,

wherein the pressurizing surface and the supporting surface each form a lateral surface (Fig. 9).

However, the Abiko reference fails to explicitly disclose the two components and that the areas of the lateral surface of a truncated cone of the pressurizing surface or the supporting surface, or of the pressurizing surface and the supporting surface, each enclose an angle of 30° to 60° with the sealing surface towards said sealing surface.

The Reiners reference, a sealing system for a truncated cone seal, discloses two components (33 and 13 including 22) moving relatively to each other, said components having a first gap (gap between 13 and 33) therebetween, including a fluid medium (Col. 3, Lines 38-41) and, on the opposite side, a supporting flank (26) of the component accommodating the sealing ring (Fig. 3),

wherein the second gap extends over the entire lateral extension of the sealing ring (Fig. 3),

wherein one of the two components displays a groove (17) without an undercut to receive the sealing ring, where the groove displays a supporting flank (26) opposite

the supporting surface of the sealing ring (Fig. 3), and a pressure-side flank (24) opposite the pressurizing surface of the sealing ring (Fig. 3), where the sealing surface of the sealing ring projects from the groove in the radial direction (Fig. 3), and wherein said sealing ring has a central longitudinal axis (e.g. axis shown in Fig. 1);

wherein a second gap (e.g. gap between 27 and 24) is provided, at least between the pressurizing surface of the sealing ring and the pressure-side flank (Fig. 3), into which the fluid medium to be provided on the pressure side of the sealing ring can flow, pressing the sealing ring in sealing fashion against the supporting flank of the groove and against one of said two components (Fig. 3), and, by application of pressure by the fluid medium, the supporting surface of the sealing ring, minus the area of the supporting surface corresponding to the first gap width, can be brought into flat area contact with the supporting flank of the groove (Fig. 3), minus the area of the supporting flank corresponding to the second gap width (Fig. 3), at least on the side facing the sealing surface (Fig. 3),

wherein the supporting surface results in flat contact with the supporting flank of the groove (Fig. 3),

wherein the second gap width extends over the entire lateral extension of the sealing ring (Fig. 3),

wherein the sealing surface being in sealing contact with one of the two components provides a sealing area (e.g. area of contact between 27 and 33 in Fig. 3) and wherein the sealing area is provided when the supporting surface of the sealing ring is in flat area contact with the supporting flank of the groove (Fig. 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the two components to the Abiko reference in view of the teachings of the Reiners reference in order to provide a more efficient seal and since providing the two components would provide predictable results.

Discovering an optimum range of a result effective variable involves only routine skill in the art. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the areas of the lateral surface of a truncated cone of the pressurizing surface or the supporting surface, or of the pressurizing surface and the supporting surface, each enclose an angle of 30° to 60° with the sealing surface towards said sealing surface as a matter of mechanical expedience.

Regarding claim 27, the modified Abiko reference discloses the invention substantially as claimed in claim 25, including the sealing surface of the sealing ring being the surface with the greatest width referring to the cross-sectional view of the sealing ring (Abiko, Fig. 9),

wherein the sealing surface of the sealing ring is in flat and full area contact with the supporting flank of the groove over the entire height and the entire circumference of the sealing ring (Abiko, Fig. 9); and

wherein the sealing surface of the sealing ring in the pressurized sealing position of the sealing ring is in full area contact with the opposite component (Abiko, Fig. 9).

Regarding claim 28, the Abiko reference discloses a sealing arrangement (Fig. 9) consisting essentially of a sealing ring (110) having a generally triangular or trapezoidal cross-section (Fig. 9) including a radially internal or external sealing surface (e.g. surface of 110 in contact with 200), where, to one side of the sealing surface, the sealing ring displays a pressurizing surface (e.g. right surface of 110) and, on the opposite side, a supporting surface (e.g. left surface of 110),

wherein the supporting surface is completely designed as a lateral surface of a truncated cone (Fig. 9),

wherein the sealing ring is divided almost completely or throughout in the radial direction at one point on its circumference (e.g. at T), forming a weaker area,

wherein the entire sealing surface is in sealing contact (Fig. 9) to form a seal when the sealing ring is pressurized.

However, the Abiko reference fails to explicitly disclose the two components and that the areas of the lateral surface of a truncated cone of the pressurizing surface or the supporting surface, or of the pressurizing surface and the supporting surface, each enclose an angle of 30° to 60° with the sealing surface towards said sealing surface.

The Reiners reference, a sealing system for a truncated cone seal, discloses two components (33 and 13 including 22) moving relatively to each other, said components having a first gap width (gap width between 13 and 33) therebetween, including a fluid medium (Col. 3, Lines 38-41) and, on the opposite side, a supporting flank (26) of the component accommodating the sealing ring (Fig. 3),

wherein one of the two components displays a groove (17) without an undercut to receive the sealing ring, where the groove displays a supporting flank (26) opposite the supporting surface of the sealing ring (Fig. 3), and a pressure-side flank (24) opposite the pressurizing surface of the sealing ring (Fig. 3), where the sealing surface of the sealing ring projects from the groove in the radial direction (Fig. 3), and wherein said sealing ring has a central longitudinal axis (e.g. axis shown in Fig. 1);

wherein a second gap width (e.g. gap width between 27 and 24) is provided, at least between the pressurizing surface of the sealing ring and the pressure-side flank (Fig. 3), into which the fluid medium to be provided on the pressure side of the sealing ring can flow, pressing the sealing ring in sealing fashion against the supporting flank of the groove and against one of said two components (Fig. 3), and, by application of pressure by the fluid medium, the supporting surface of the sealing ring, minus the area of the supporting surface corresponding to the first gap width, can be brought into flat area contact with the supporting flank of the groove (Fig. 3), minus the area of the supporting flank corresponding to the second gap width (Fig. 3),

wherein the supporting surface results in flat contact with the supporting flank of the groove (Fig. 3),

wherein the second gap extends over the entire lateral extension of the sealing ring (Fig. 3),

wherein the sealing arrangement is characterized in that the pressurizing surface or the supporting surface, or the pressurizing surface and the supporting surface, each form a lateral surface and the lateral surfaces each extend at least up to the area of the

sealing ring projecting from the groove and into said first gap between said components (Fig. 3),

wherein the sealing surface being in sealing contact with one of the two components provides a sealing area (e.g. area of contact between 27 and 33 in Fig. 3) and wherein the sealing area is provided when the supporting surface of the sealing ring is in flat area contact with the supporting flank of the groove (Fig. 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the two components to the Abiko reference in view of the teachings of the Reiners reference in order to provide a more efficient seal and since providing the two components would provide predictable results.

Discovering an optimum range of a result effective variable involves only routine skill in the art. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the areas of the lateral surface of a truncated cone of the pressurizing surface or the supporting surface, or of the pressurizing surface and the supporting surface, each enclose an angle of 30° to 60° with the sealing surface towards said sealing surface as a matter of mechanical expedience. Note that the modified Abiko reference discloses the structural limitations of claim 1 and is therefore **capable of** radial compression towards the radially internal sealing surface, or of expansion towards the radially external sealing surface.

8. Claim 10, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Abiko in view of Reiners as applied to claims 1, 4-7, 9, 11, 14-20, 22, 23, and 25-28 above, and further in view of Flick (US Patent No. 2,970,871).

Regarding claim 10, the Abiko reference, discloses the invention substantially as claimed in claim 1, including the seal ring being made of rubber (Fig. 9).

However, the Abiko reference fails to explicitly disclose the material of the seal ring consisting of a plastic with an elongation at break at room temperature of $\leq$ 50 percent.

The Flick reference, a piston ring, discloses that seals maybe made of rubber, synthetic rubber, or PTFE (Col. 3, Lines 42-48).

It would have been obvious at the time the invention was made to provide the seal ring of the Abiko reference with PTFE in view of the teachings of the Flick reference to provide a material having a desired hardness.

9. Claim 21, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Abiko in view of Reiners as applied to claims 1, 4-7, 9, 11, 14-20, 22, 23, and 25-28 above, and further in view of Freudenthal (US Patent No. 4,618,154).

Regarding claim 21, the modified Abiko reference discloses the invention substantially as claimed in claim 1, including the component accommodating the sealing ring being a shaft.

However, the modified Abiko reference fails to explicitly disclose the component accommodating the sealing ring being a shaft guide, and in that a shaft capable of

rotation relative to it is provided, with which the sealing surface of the sealing ring can be brought into contact in sealing fashion.

The Freudenthal reference, a seal for a shaft, discloses that the seal can be in either the shaft (Fig. 6) or the shaft guide (Fig. 7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the shaft guide with the seal in the modified Abiko reference in view of the teachings of the Freudenthal reference in order to provide a seal for different pressure applications.

Response to Arguments

10. Applicant's arguments filed 4/24/09 have been fully considered but they are not persuasive.

With regards to the applicant's argument of the Abiko reference, the argument is not persuasive because the Abiko reference does not teach away or discourage flat area contact between a supporting surface of a sealing ring and a supporting flank of a groove.

With regards to the applicant's argument of the radial compression or expansion of the sealing ring, the argument is not persuasive because the modified Abiko reference discloses the structural limitations as claimed and is therefore **capable of** functioning in the same manner as claimed. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the compression allowing the sealing ring of

the present invention to maintain flat area contact with the surface of the first component and the supporting surface with the supporting flank) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant further argues that the modified Abiko reference fails to disclose "a sealing area is provided with the sealing surface in sealing contact with a component when the supporting surface of the sealing ring is in flat area contact with the supporting flank of the groove of the other component." This argument is not persuasive because seal element 27 of Reiners is clearly is flat contact with element 33 whether or not there is a pressure.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GILBERT Y. LEE whose telephone number is (571)272-5894. The examiner can normally be reached on 8:00 - 4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer H. Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Jennifer H Gay/
Supervisory Patent Examiner, Art Unit 3676

/G. Y. L./
Examiner, Art Unit 3676